

## **ONE HANDED, POP-UP CARGO MANAGEMENT SYSTEM**

### **RELATED APPLICATIONS**

This application is related to Application Serial No. 10/282,598, filed October 29, 2002, the entire contents of which is herein incorporated by reference.

### **BACKGROUND OF THE INVENTION**

#### **Field of the Invention**

[0001] The present invention relates to a vehicle storage system, and in particular to a cargo management system that can easily be transported and deployed by the user for separating, controlling and/or securing cargo and other items.

#### **Description of the Related Art**

[0002] Conventional cargo storage devices for motor vehicles normally employ netting affixed to an elastic cord. The location for this conventional device directed to cargo separation, control, and securement is normally limited to a trunk space or the rear portion of a mini-van or sport utility vehicle (SUV). The netting and elastic cord device however doesn't completely secure weighted cargo that may move or roll during operation of the vehicle. In addition, this type of conventional device lacks rigidity that may prevent weighted cargo from moving freely in the storage area. Further, the netting only provides a single barrier for separating cargo because the netting may only stretch from a first side of the storage area to a second side of the storage area.

### **SUMMARY OF THE INVENTION**

[0003] The inventor of the present invention has recognized the problems associated with conventional vehicle storage systems and has developed a one-handed, pop-up cargo management system that is easily transportable, deployed and collapsed by the user. Specifically, the cargo management system comprises a .

### **BRIEF DESCRIPTION OF THE DRAWINGS**

[0004] In the drawings:

[0005] Figure 1 is a top perspective view of the cargo management system according to the invention when in a collapsed position;

[0006] Figure 2 is a top perspective view of the cargo management system of the invention when in a partially deployed position;

[0007] Figure 3 is a top perspective view of the cargo management system of the invention when in another partially deployed position;

[0008] Figure 4 is a top perspective view of the cargo management system when in a fully deployed position;

[0009] Figure 5 is a perspective view of the cargo management system of the invention when being transported by the user; and

[0010] Figure 6 is a perspective view of the cargo management system of the invention as used in a vehicle.

### **DESCRIPTION OF THE PREFERRED EMBODIMENT**

[0011] Figure 1 shows the cargo management system, shown generally at 10, when in a fully collapsed position. In general, the cargo management system 10 is preferably made of lightweight, rigid plastic material, such as a thermoplastic composite (TPC) or the like. In the illustrated embodiment, the cargo management system 10 is light in weight (approximately 10 lbs.) to allow the user to selectively position the cargo management system 10 within a vehicle 60, as shown in Figure 6. It will be appreciated that the invention is not limited by the type of rigid, lightweight material, and that the invention can be practiced with any suitable lightweight, rigid material that can allow the user to easily transport the cargo management system 10. For decorative purposes, a decorative carpet or other trim may be applied over the one or more outer surfaces of the cargo management system 10. When in the fully collapsed position shown in Figure 1, the cargo management system 10 may be

stowed away in a compact, collapsible, “thin stack form” in or outside of the vehicle. For example, the cargo management system 10 when in the collapsed position can be stowed within any “dead storage space” of the vehicle, such as a trunk space in a rear portion of a vehicle, or under a bench style seat, such as a rear seat, a third row seat, or the like. In addition, the cargo management system 10 can be easily transported by the user when in the collapsed position, as shown in Figure 5.

**[0012]** Referring back to Figure 1, the cargo management system 10 includes a top perimeter member 12, a pair of side perimeter members 14, 16, and a bottom perimeter member 18. A opening or handle 18a is formed in the bottom perimeter member 18 includes a cutout or handle 18a large enough to allow the user to easily transport the cargo management system 10, as shown in Figure 5. The cargo management system 10 includes a pair of top panels 20, 22 that are hingedly connected to the top perimeter member 12 and bottom perimeter member 18, respectively, by the use of a live or living hinge 21, 23, respectively. Each top panel 20, 22 include a semi-hemispherical cutout 24a, 24b, respectively, that are positioned in a mirror symmetric relationship with each other. One of the cutouts 24a, 24b includes an insert 25 mounted therein. The insert 25 may include indicia 25a thereon to provide instructions to the user on how to use the cargo management system 10. Preferably, the insert 25 has a thickness somewhat less than the thickness of the top panel 20, 22 in which the insert 25 is mounted such that the user can position one or more fingers behind the insert 25 and pull the top panel 20, 22 in which the insert 25 is mounted toward the user, as shown in Figure 2. Thus, the cargo management system 10 can be deployed with using one hand of the user, as shown in Figures 2 and 3.

**[0013]** Referring back to Figure 1, each top panel 20, 22 may include one or more raised portions 20a, 22a, respectively, to provide structural rigidity to the top panel 20, 22, as well as protect the top panel 20, 22 when an article (not shown) is placed on the top panel 20, 22. In the illustrated embodiment, each top panel 20, 22 includes five (5) raised portions 20a, 22a, respectively. However, it will be appreciated that the

invention is not limited by the number of raised portions 20a, 22a, and that the invention can be practiced with any desirable number of raised portions 20a, 22a. As seen in Figure 1, the top panels 20, 22 are substantially aligned with each other to form a substantially continuous, flush outer surface when the cargo management system 10 is in the collapsed position.

**[0014]** Figure 2 shows the cargo management system 10 in a partially deployed position. As seen in Figure 2, the cargo management system 10 includes a plurality of triangular-shaped side panels 26, 27, 28, 29 and a pair of optional triangular-shaped rib members 30, 31. The side panels 26, 27 are hingedly connected to the top panel 20 by live or living hinges 32, 33, respectively. Similarly, the side panels 28, 29 are hingedly connected to the top panel 20 by live or living hinges 34, 35, respectively. In addition, the side panel 26 is hingedly connected to the side panel 28 by a live or living hinge 36 and the side panel 27 is hingedly connected to the side panel 29 by a live or living hinge 37. Further, the optional rib members 30, 31 are hingedly connected to the top panels 20, 22 by a live or living hinges 38, 39, respectively, and are hingedly connected to each other by a live or living hinge 40. As seen in Figure 2, the side panels 26, 28 and the optional rib members 30, 31 are angled toward the side panels 27, 29 when the cargo management system 10 is in the partially deployed position shown in Figure 2.

**[0015]** Figure 3 shows the cargo management system 10 in another partially deployed position. As seen in Figure 3, the side panels 27, 29 are hingedly connected to a triangular-shaped side panel 41. The side panel 41 is hingedly connected to a bottom panel 45. Similarly, the side panels 26, 28 are hingedly connected to a triangular-shaped side panel 42. The side panel 42 is hingedly connected to the bottom panel 45. Likewise, the pair of rib members 30, 31 are hingedly connected to a triangular-shaped rib member 43. The rib member 43 is hingedly connected to the bottom panel 45. It should be noted that the bottom panel 45 may constitute the entire bottom of the cargo management system 10. Thus, the bottom panel 45 may be integrally formed with the top perimeter member 12, the pair of side perimeter

members 14, 16, and the bottom perimeter member 18. The side panels 41, 42 and the rib member 43 are hingedly connected to the bottom panel 45 by live or living hinges, 46, 47, 48, respectively. The side panel 41 is hingedly connected to the side panels 27, 29 by live or living hinges 49, 50. Similarly, the side panel 42 is hingedly connected to the side panels 26, 28 by live or living hinges 51, 52. Likewise, the rib member 43 is hingedly connected to the rib members 30, 31 by live or living hinges 53, 54.

[0016] As seen in Figures 1-4, the live hinge connections allow the side panels 26, 27, 28, 29, 41, 42 and the rib members 30, 31, 43 to form a deployment angle,  $\theta$ , of approximately zero (0) degrees with respect to the bottom panel 45 and are substantially parallel to the bottom panel 45 when the cargo management system 10 is in a collapsed position, as shown in Figure 1. As best seen in Figures 2 and 3, the side panels 26, 28 fold over the side panel 42 and the side panels 27, 29 fold over the side panel 41 when the cargo management system 10 is in the collapsed position. Similarly, the rib members 30, 31 fold over the rib member 43 when the cargo management system 10 is in the collapsed position.

[0017] The live hinge connections also allow the side panels 26, 27, 28, 29, 41, 42 and the rib members 30, 31, 43 to form a deployment angle,  $\theta$ , of approximately ninety (90) degrees with respect to the bottom panel 45 and are substantially perpendicular to the bottom panel 45 when the cargo management system 10 is in a fully deployed position, as shown in Figure 4. In other words, the side panels 26, 27, 28, 29, 41, 42 and the optional rib members 30, 31, 43 pop-up from the bottom panel 45 when the user pulls the top panel 22 when the cargo management system 10 is in the collapsed position (Figure 1) to place the cargo management system 10 in the fully deployed position (Figure 4).

[0018] The live hinge connections described above can be realized by using a one-sided tape of a type well-known in the art. However, it will be appreciated that the live hinge connections described above can be achieved by any appropriate means well known in the art. For example, the live hinge connections 21, 23 can be formed

by decreasing the thickness along the junction between the top panels 20, 22 and the top perimeter member 12 and the bottom perimeter member 18, respectively. Thus, an alternate embodiment of the cargo management system 10 may include live hinge connections without the use of the one-sided tape. The live hinge connections may also be replaced with other means well-known in the art for hingedly connecting the various panels of the cargo management system 10, such as a piano-type hinge, door-type hinge, or the like.

**[0019]** As seen in Figure 4, the rib members 30, 31, 43 divide the cargo management system 10 into one or more individual storage wells 55 of varying size when the cargo management system 10 is in the fully deployed position. Preferably, the storage wells 55 are suitably sized so as to provide enough space to store goods of interest, such as a six-pack of beverages 56, a can of paint 57, a bag of groceries 58, a water container 59, or the like. It will be appreciated that the storage wells 55 can be suitably sized by including additional rib members to provide additional storage wells 55 or no rib members to provide a single storage well 55 that occupies the maximum amount of space.

**[0020]** As seen in Figure 6 and described above, the cargo management system 10 of the invention can easily be transported to the vehicle 60 and deployed by the user for separating, controlling and/or securing cargo and other items in the vehicle 60. Once the items are removed from the cargo management system 10, the cargo management system 10 can be easily stored by placing the cargo management system 10 in the collapsed position.

**[0021]** While the invention has been specifically described in connection with certain specific embodiments thereof, it is to be understood that this is by way of illustration and not of limitation, and the scope of the appended claims should be construed as broadly as the prior art will permit.